

**GUNNER'S
POCKET MANUAL
MACHINEGUN, 7.62MM, M60**



**UNITED STATES ARMY INFANTRY SCHOOL
Fort Benning, Georgia**

APRIL 1963

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This handbook is designed for, directed toward, and dedicated to the most important man in machinegunnery--THE GUNNER. It contains what every soldier directly associated with the M60 machinegun must know to train and operate well with it in the FIELD. Additional copies may be obtained for 10¢ each from The Book Store, USAIS, Fort Benning, Georgia.

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BASIC DATA

Weight of M60 machinegun with bipod	23 pounds
Rates of Fire:	
Sustained (slow - 10 minutes before barrel change)	100 rounds per minute
Rapid (fast - 2 minutes before barrel change)	200 rounds per minute
Cyclic (maximum)	550+ rounds per minute
Maximum range	3,725 meters
Maximum effective range (distance average man can see to adjust fire)	1,100 meters
Maximum distance of grazing fire	700 meters
Tracer Burnout	900 meters
Maximum sector of fire (with tripod)	875 mils
Basic load (with gun under any condition)	800 rounds
Gunner carries three 100-round bandoleers	
Assistant gunner carries three 100-round bandoleers	
Ammo bearer carries two 100-round bandoleers for each gun (see page 12)	
Rear Sight:	
Deflection: One click on windage knob equals 1 mil of change	
Elevation: Four clicks on elevating knob equals 1 mil of change	
Traversing and Elevating Mechanism:	
Traverse: One click on traversing handwheel moves line of aim 1 mil (maximum varies from 90 to 110 mils)	
Elevation: One click on elevating handwheel moves line of aim 1 mil	

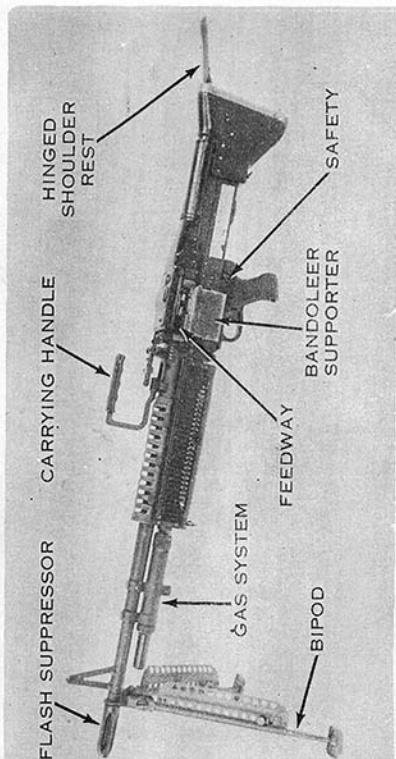


Figure 1. Machinegun, 7.62mm, M60 on bipod mount

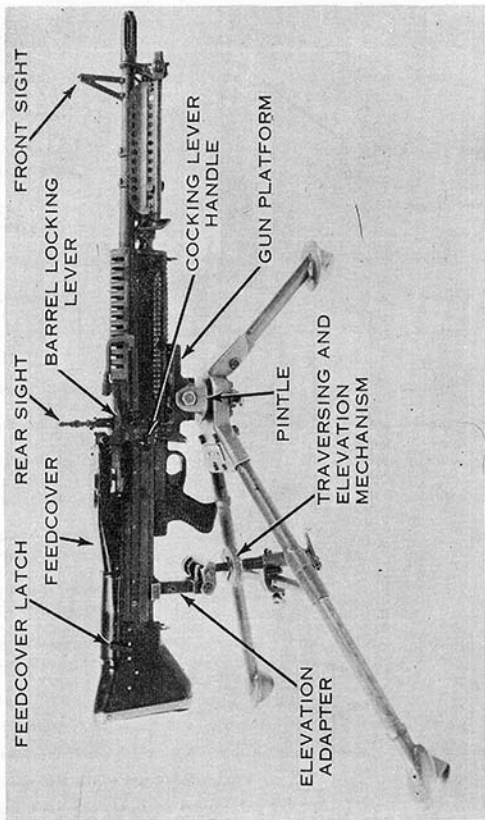


Figure 2. Machinegun, 7.62mm, M60 on M122 tripod mount.

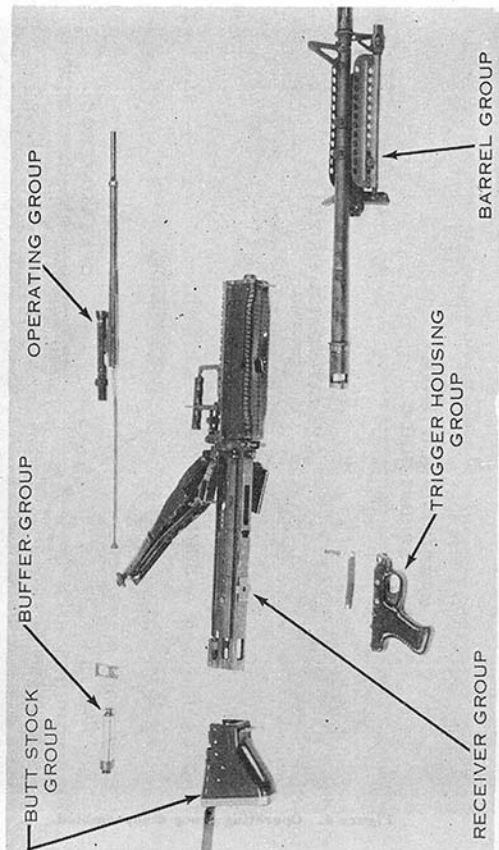


Figure 3. Machinegun, 7.62mm M60, disassembled into six major groups.

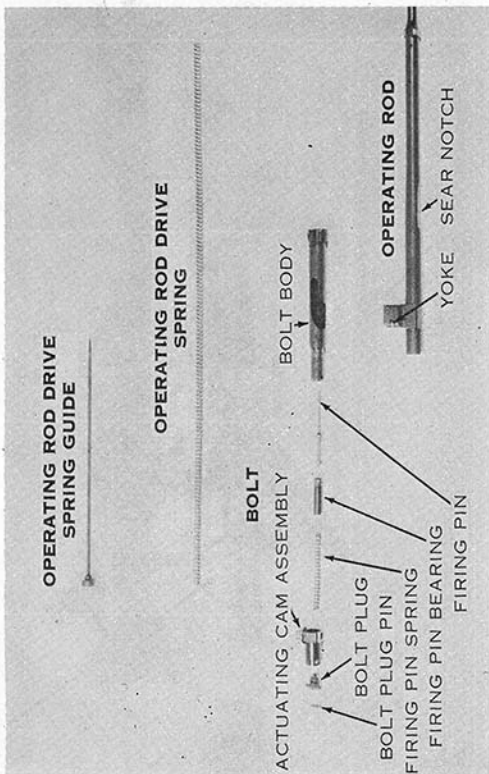


Figure 4. Operating group disassembled.

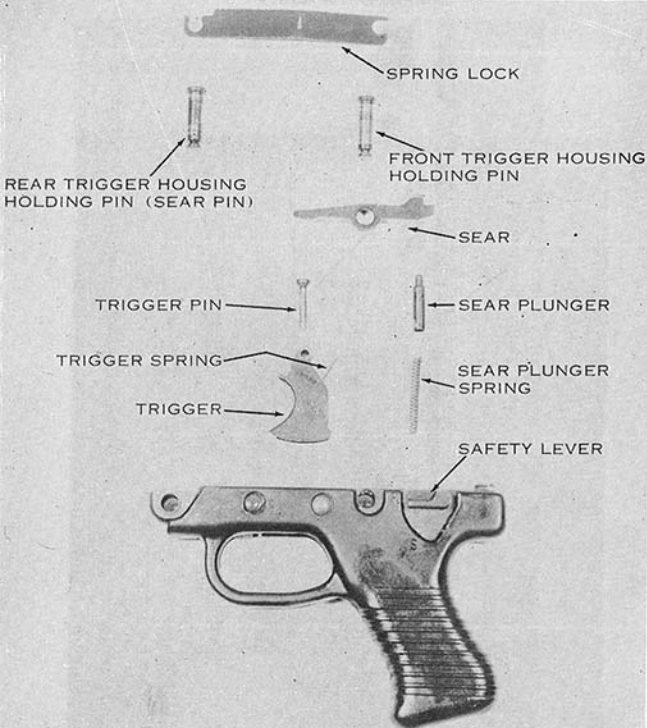


Figure 5. Trigger housing group disassembled.

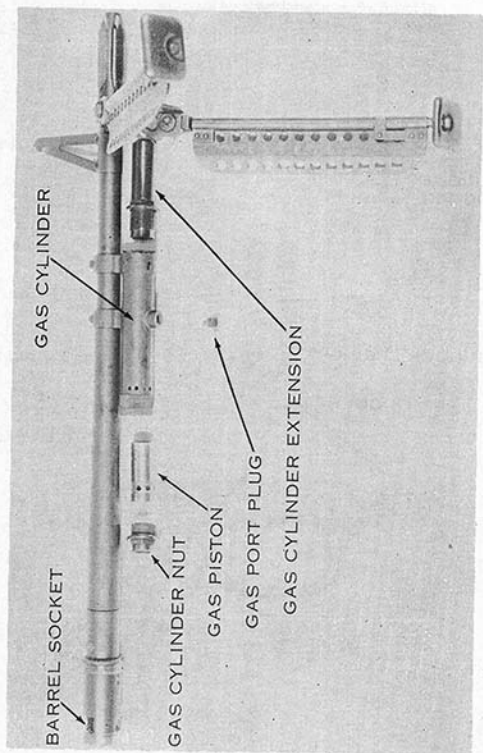


Figure 6. Barrel group disassembled.

FIELD MAINTENANCE

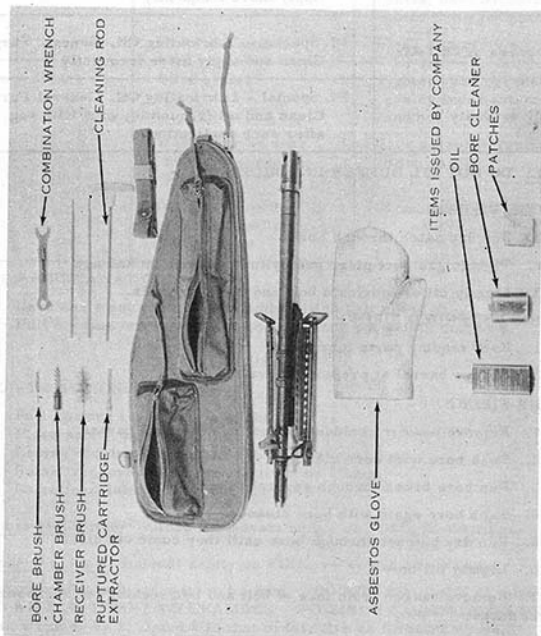


Figure 7. Maintenance equipment.

LUBRICATION CHART

Cold - Below 0° F	LAW--Lubricating Oil Weapons - Oil lightly
Normal - Above 0°F	PL Special - Lubricating Oil, General Purpose
Extremely Hot	PL Special - Lubricating Oil, General Purpose Apply more frequently
Dampness or Salt Air	PL Special - Lubricating Oil, General Purpose Clean and apply more frequently
Sandy or Dusty	PL Special - Lubricating Oil, General Purpose Clean and oil frequently; wipe with rag after each application

NOTE: DO NOT OIL BUFFER INTERIOR.

BEFORE FIRING:

1. Run dry patch through bore.
2. Tighten gas port plug, gas cylinder extension and nut.
3. Lightly oil or lubricate bolt and receiver rails.

DURING EXTENDED FIRING:

1. Keep moving parts lubricated.
2. Change barrel at proper intervals.

AFTER FIRING:

1. Remove powder residue and foulings from all parts.
2. Swab bore with bore cleaner.
3. Run bore brush through several times.
4. Swab bore again with bore cleaner.
5. Run dry patches through bore until they come out clean.
6. Lightly oil bore.
7. Remove carbon from face of bolt and bolt locking lug recesses in barrel socket.

NOTE: THE GAS SYSTEM IS CLEANED ONLY WHEN THE GUN OPERATES SLUGGISHLY. THIS PREVENTS CONSIDERABLE WEAR ON THE WASHER TABS AND OTHER PARTS.

TROUBLE SHOOTING MALFUNCTIONS

MALFUNCTION	PROBABLE CAUSE	CORRECTIVE ACTION
Sluggish Operation	Excessive friction	Clean and oil working parts; have armorer replace damaged parts
	Dirty gas system	Clean gas system
Runaway Gun	Loss of Gas	Tighten gas port plug, gas cylinder extension and nut
	Worn sear or sear notch on operating rod	Have armorer replace worn parts
	Dirt, sand or dust in receiver and operating group	Clean and lightly oil

TO STOP A RUNAWAY GUN:

1. Have assistant gunner twist ammunition belt apart or--
2. Pull cocking lever handle to the rear and put safety on SAFE.

STOPPAGES

IMMEDIATE ACTION:

- *1. Pull cocking lever handle to the rear.
2. Place safety on SAFE.
3. Return cocking lever handle to forward position.
4. Raise feedcover, remove any links or ammo.
5. Raise feedplate and inspect chamber.

If round is in chamber: Close feedcover; safety on FIRE; fire weapon.

If chamber is clear: Reload; safety on FIRE; relay and fire weapon.

*Hold to rear if it will not stay on its own. (DO NOT RELEASE AS ANOTHER ROUND WILL ATTEMPT TO CHAMBER - POSSIBLY CAUSING EXPLOSION.) Perform steps 4, 1, 2, 3 and 5 in that order; fire as directed above.

NOTE: THE FEEDCOVER MUST NEVER BE RAISED OR LOWERED WHEN THE BOLT IS FORWARD.

SUBSEQUENT ACTION: If immediate action fails to reduce stoppage, **CLEAR** weapon and use following guide.

STOPPAGE	PROBABLE CAUSE	CORRECTIVE ACTION
Failure to feed	Ammo belt installed wrong Improper linking Links in feedplate Loss of gas Missing or broken bolt plug Defective feedcover latch, feed pawl or feed pawl spring	Turn belt over (open portion of link down) Push round in or out Remove links Clean gas port Tighten or have armorer replace Have armorer secure new feedcover
Failure to chamber	Ruptured cartridge case or damaged round	Remove case or round
Failure to fire	Broken firing pin or spring	Have armorer replace
Failure to extract	Broken extractor or spring Short recoil	Have armorer replace Clean gas port with combination wrench
Failure to eject	Sticking or damaged ejector or ejector spring Short recoil	Clean and/or have armorer replace Clean gas port with combination wrench
Failure to cock	Broken sear Worn sear notch on operating rod Short recoil	Have armorer replace sear Have armorer replace operating rod Clean gas port and gas cylinder

CREW ORGANIZATION, EQUIPMENT, AND DUTIES

ORGANIZATION	EQUIPMENT	BEFORE ACTION DUTIES
Gunner	Machinegun 3 bandoleers (100 rds ea)	Examines ammo. Examines the gun. Sets rear sight at desired range and lowers it.
Assistant Gunner	Mount, tripod, M122 3 bandoleers (100 rds ea) Spare barrel case (spare barrel, traversing and elevating mechanism and accessories)	Examines ammo. Examines tripod. Rotates elevating handwheel exposing 1 1/2" of threads above and below the elevating handwheel. Rotates the traversing handwheel until an equal number of threads on the traversing screw are exposed on each side of the upper elevating screw. Removes spare barrel from case and examines it.
*Ammo Bearer	4 bandoleers (2 for ea gun - 100 rds ea)	As prescribed.

*Assuming one ammo bearer will carry antitank ammo and the other will work for both machinegun crews.

CORRECT SIGHT ALINEMENT AND SIGHT PICTURE

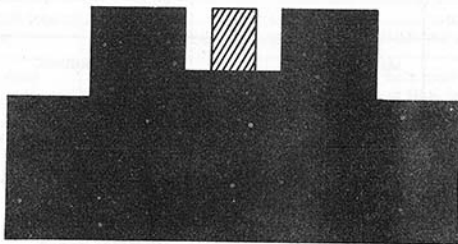


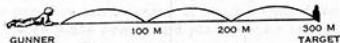
Figure 8. Correct sight alinement.



(AIM AT CENTER BASE OF TARGET)

Figure 9. Correct sight picture.

RANGE DETERMINATION



ESTIMATE 100 METERS ON GROUND; ROLL END-OVER-END OUT TO TARGET.

Figure 10. Less than 500 meters.



ESTIMATE RANGE TO MIDPOINT AS ABOVE AND DOUBLE FIGURE.

Figure 11. 500 - 1,000 meters.

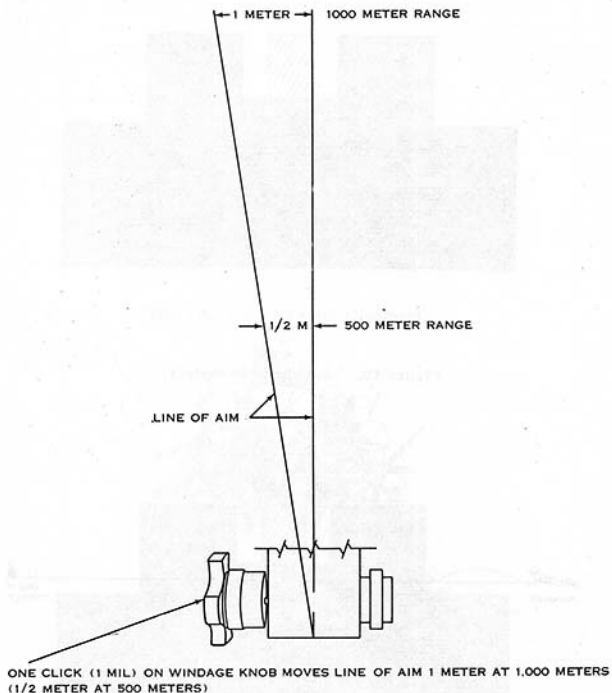


Figure 12. Mil relationship.

LONG RANGE ZEROING

1. Pick target with known range (suggest 300-700 meters); place on rear sight with zero windage.
2. Fire 6-9 round burst.
3. Adjust for deflection (using the mil relationship) by turning the windage knob the required number of clicks.
4. Adjust for elevation using experience or trial and error; raise rear sight slide if hitting low and lower if hitting high.
5. Continue process until center of beaten zone falls on center base of target. Loosen range plate screw and place upper left edge of rear sight slide at range to target. This completes zeroing.

LONG RANGE FIRE ADJUSTMENT (Without Changing Rear Sight)

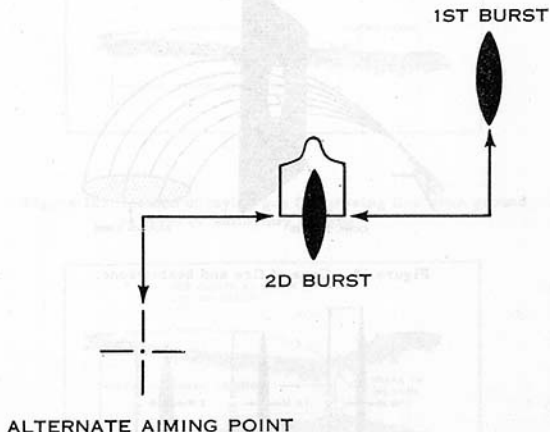


Figure 13. Long range fire adjustment.

If first burst misses, select aiming point same distance from target IN OPPOSITE DIRECTION; aim and fire.

CHARACTERISTICS OF FIRE



Figure 14. Trajectory.

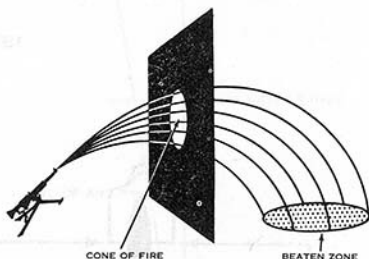


Figure 15. Cone of fire and beaten zone.

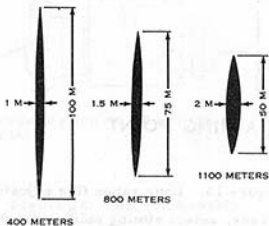


Figure 16. Approximate beaten zones on level ground.

OBTAINING GRAZING FIRE



Figure 17. Grazing fire.

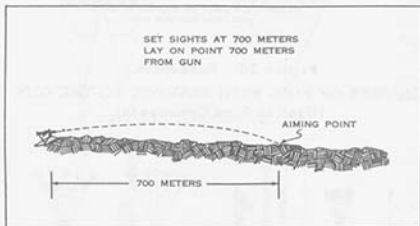


Figure 18. Method of laying gun for grazing fire when ground is level or uniformly sloping.

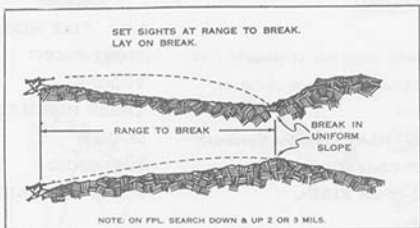


Figure 19. Method of laying gun when there are breaks in the ground at a range less than 700 meters.

OBTAINING GRAZING FIRE (CONTINUED)



DEAD SPACE SHOULD BE
COVERED BY OTHER WEAPONS.
DEADSPACE (CANNOT BE COVERED BY GRAZING
FIRE FROM THIS GUN PSN).

Figure 20. Deadspace.
CLASSES OF FIRE WITH RESPECT TO THE GUN
(Used in Fire Commands)



Figure 21. Classes of fire with respect to the gun.

FIRE COMMANDS

<u>Format</u>	<u>Example</u>
ALERT	NO 1, FIRE MISSION
DIRECTION (Only when not obvious)	RIGHT FRONT
DESCRIPTION (Only when not obvious)	TROOPS
RANGE	THREE HUNDRED
MANIPULATION (Only when not obvious)	SEARCH
RATE OF FIRE (Only if sustained)	SUSTAINED
COMMAND TO OPEN FIRE	AT MY COMMAND --- FIRE

TARGET ENGAGEMENT



Figure 22. Symbols.



Figure 23. Traversing fire.

SINGLE - Initial lay on a flank or portion of target presenting greatest threat.

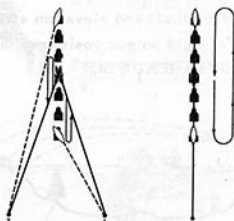
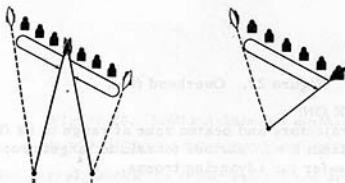


Figure 24. Searching fire.

SINGLE - Initial lay on midpoint unless another portion of target presents greater threat.



SINGLE - Initial lay on near flank unless another portion of target presents greater threat.

Figure 25. Traversing and searching fire.

SECTOR LIMIT AND ELEVATION STAKES

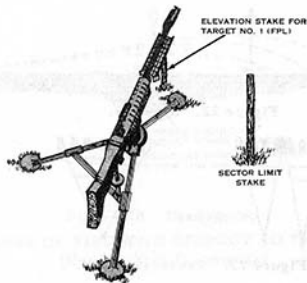


Figure 26. Sector limit and elevation stakes.
(Eliminates use of light on gun position at night.)

OVERHEAD FIRE

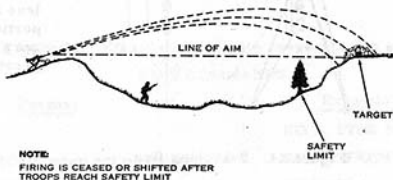


Figure 27. Overhead fire.

SAFETY LIMIT IS BASED ON:

1. Knowledge of trajectory and beaten zone at range to be fired.
2. Contour of the land; i. e., whether terrain to target drops below line of aim, thus making it safer for advancing troops.

MINIMUM PRECAUTIONS:

1. Fire only with tripod mount.
2. Do not fire through trees.
3. Do not fire beyond 1,100 meters.
4. Do not use tracer ammunition beyond 750 meters.

EMPLACEMENT

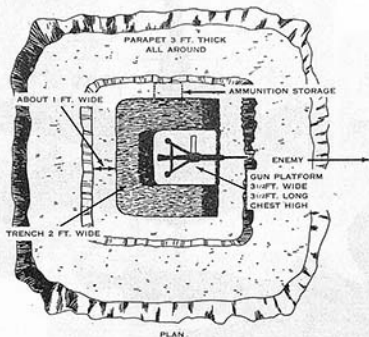
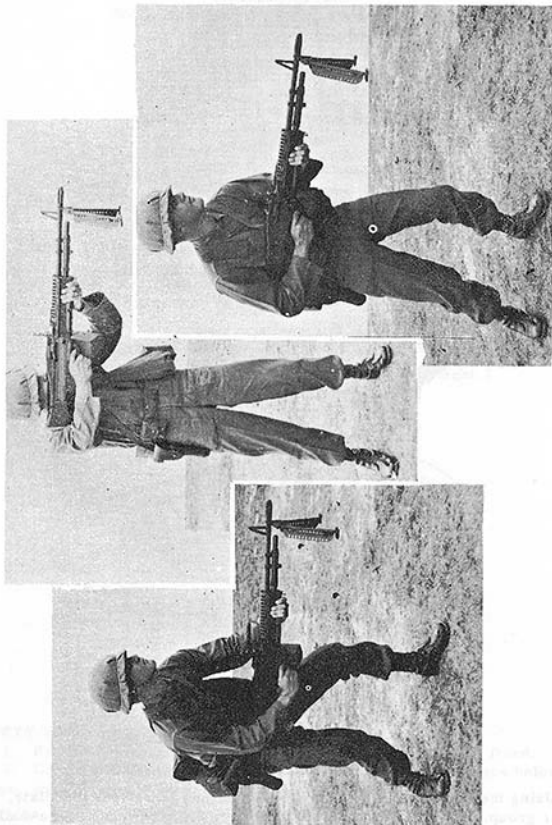


Figure 28. M60 machinegun emplacement.

DESTRUCTION TO PREVENT ENEMY USE

Using the barrel, knock the feedcover off and smash the feedplate, receiver group, and operating rod. If time permits, continue to smash all parts essential to operation including spare parts.

ASSAULT FIRING POSITIONS



HIP

SHOULDER

UNDERARM

Figure 29. Assault firing positions.

TRAVERSING AND ELEVATING MECHANISM

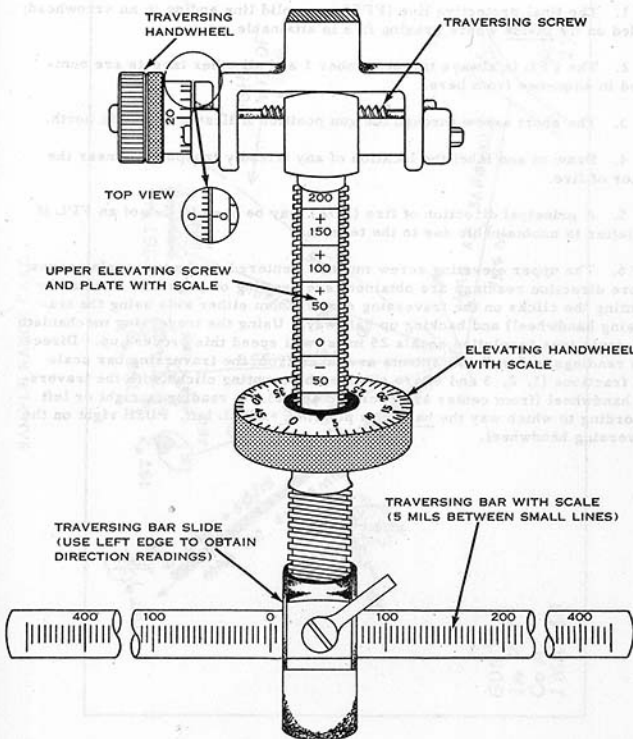


Figure 30. Traversing and elevating mechanism.

RANGE CARD PREPARATION

1. The final protective line (FPL) is a solid line ending in an arrowhead; shaded on its inside where grazing fire is attainable.
2. The FPL is always target number 1 and all other targets are numbered in sequence from here.
3. The short arrow through the gun position indicates magnetic north.
4. Draw in and label the location of any friendly troops in or near the sector of fire.
5. A principal direction of fire (PDF) may be used in lieu of an FPL if the latter is unobtainable due to the terrain.
6. The upper elevating screw must be centered on the traversing screw before direction readings are obtained (see drawing on page 23). Center by counting the clicks on the traversing screw (from either side using the traversing handwheel) and backing up half way. Using the traversing mechanism dial scale (one revolution equals 25 mils) will speed this process up. Direction readings in 5-mil increments are taken from the traversing bar scale and fractions (1, 2, 3 and 4) are obtained by counting clicks with the traversing handwheel (from center as described above). A reading is right or left according to which way the barrel is pointing. PULL left, PUSH right on the traversing handwheel.

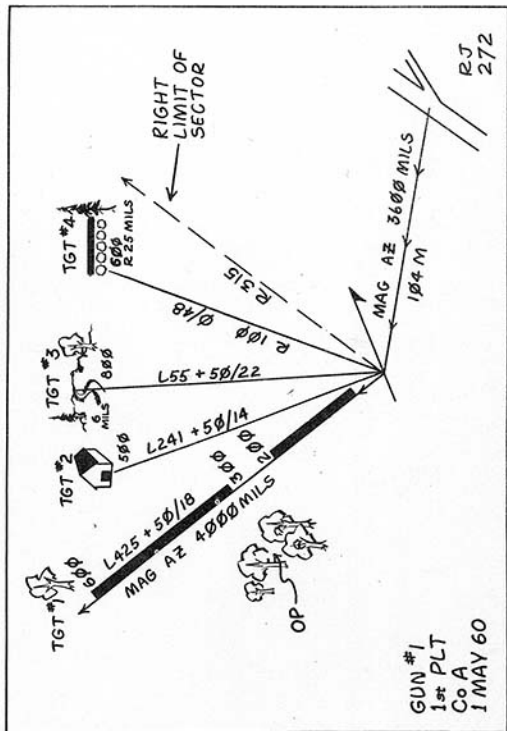


Figure 31. Sample range card.